Haliotis pourtalesii DALL, 1881 from Yucatan

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(Plate 30)

NEARLY ALL RECORDS of abalones on the east coast of North and South America are based on single specimens, found many years apart. The original specimen of *Haliotis pourtalesii* DALL, 1881 was the only one found at the time. According to the published record, it seems to be the only one ever taken which contained the animal. The dramatic history of our knowledge of this rare species has been recounted in the monograph of *Haliotis* in the Western Atlantic by the late RICHARD FOSTER (1946). Briefly, the specimen found in 1869 was destroyed in the Chicago fire of 1871, and described from memory by DALL in 1881, without benefit of illustration. No other material was taken until JOHN B. HENDERSON (1915) found another solitary specimen, in 1913. After deliberate search of the area in 1916 he found a few more. According to FOSTER, a few additional specimens were found by L. A. Burry in 1944. Until FOSTER's monograph appeared *H. pourtalesii* was the only abalone known from the Western Atlantic. FOSTER described a second species, *H. barbouri,* which was based on a single empty shell found on the Copacabana beach at Rio de Janeiro, Brazil. This is about the size of *H. pourtalesii,* but seems to differ significantly in sculpture and form, as well as color.

Haliotis pourtalesii has heretofore been known only from the shelf along the Florida Keys, from depths of 65 to 200 fathoms. On 8 September 1965 the National Science Foundation's Research Vessel, the *Anton Bruun,* dredged a specimen from 67 fathoms off the northeast corner of the Yucatan Peninsula, at Lat. 21° 21′ North, Long. 86° 30′ West (see Plate 30, Figures 1 and 2). While this record does not extend the range bathymetrically, it does extend it geographically to the southwest by four hundred miles. The specimen had recently died, for there was only slight erosion of the nacreous lining, which is thin and white. The maximum dimension, or length (homologous to "maximum diameter" of helicoid shells such as *Turbo* and *Helix*) is 15 and a fraction millimeters, or $\frac{5}{8}$ of an inch. The sculpture, color and form agree closely with the previous descriptions prepared by HENDERSON and by FOSTER. The last 5 of the 19 holes are open. The color is light brick red, with splotches of tan running alternately with red ones between the line of holes and the columellar border. The apex appears to be smooth, but it is slightly worn so that the specimen is not reliable for determining apical sculpture. The dredge haul containing this single specimen had also a few red nodules of calcareous algae, about 7 cm diameter, and some fragments of a green foliose alga. This suggests the bottom was composed chiefly of bedrock. The specimen is deposited in the collection of the A & M Marine Laboratory, Galveston, Texas.

Depth may be an important factor in the rarity of this species. The R/V *Anton Bruun* dredged at only one other place in the area, which was shoreward (west) of this station, and at 25 fathoms. Although that haul contained a rich molluscan assemblage, duplicating many of the species cited and figured by RICE & KORNICKER (1965) from the Campeche Bank, *Haliotis* was not among them. The fact that those authors do not cite *Haliotis* from the Campeche Bank may be because only three of the 22 samples on which their study was based were from deeper than 65 fathoms.

This work was supported by the National Science Foundation as a part of the Southeastern Pacific Biological Oceanographic Program and NSF grant GB–2753.

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The Size of Ninety-Five Thousand Cowries

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DURING OUR INVESTIGATIONS in the taxonomy and phylogeny of cowries we have measured, in these last forty years, the length of all available cowrie shells in tenths of millimeters; if we add a few reliable measurements published in papers or communicated to us by letters from various conchologists, the total of measured adult specimens of Recent Cypraeidae amounts to 94923.

The random distribution of a series of specimens usually is characterized by the arithmetic mean and the standard deviation (usually indicated by the Greek letter sigma); if we designate the total number of specimens by n, the value of the variants (i. e. length of shell) by V, the difference betwen the mean and the variants by D, and the frequency of each variant by f, the formula for the arithmetic mean $M = (\Sigma V.f) : n$ and that of the standard deviation $\sigma = \pm \sqrt{(\Sigma D^2.f) : (n-1)}$; the sign Σ indicates the sum of the subsequent products.

In symmetrical normal histograms the interval between the two sigma classes ($M \pm \sigma$) comprises 68.27%, i. e. practically $\frac{2}{3}$ of the specimens; usually no specimens are to be expected beyond the limits $M \pm 3\sigma$, as this interval theoretically includes 99.73%. The actual size of recorded extreme specimens, i. e. of minima and maxima, is rather accidental; knowing them is interesting for collectors who believe that they posses the smallest or the largest known specimen, but it is of no use in calculating the usual length of shells. The coefficient of variation expresses the variability in per cent of the average size, i. e. by the formula $v = 100\ \sigma : M$; it allows a comparison of the variability of samples the means of which differ much from each other.

These usual scientific methods can be simplified as follows:

1. We replace the arithmetic mean by the *median* (*Med*)